Transforming academic knowledge and the concept of Lived Experience: Intervention Competence in an international e-learning programme

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Abstract

Within sustainability issues climate change is recognised as one of the most challenging and defining for our future. However, the learning and teaching in this field is perceived by students as complex and contradictory, and it leaves them with uncertainties with respect to their professional practice. This paper describes a solution to flaws observed in university programmes.

The concept of the Lived Experience explains the existence of several perspectives at the same time. It connects abstract and distant scientific knowledge with personal, local and cultural diversity. It treats epistemological diversity as a resource for social learning and holistic knowledge. The authors consider this concept to be important and perhaps even crucial for the domain of sustainability, where it can be used to expand knowledge and linking academia with professionals and citizens.

In an open access Masters track called the 'Lived Experience of Climate Change', the learning goals and outcomes are operationalised using the concept of 'competence'. Complementing Transboundary Competence, this paper focuses on Intervention Competence. Intervention Competence combines strategic-political thinking with personal goal-directedness, formulating solutions and actions for climate change issues, in awareness of societal aspects. Thus the student's ability to transform academic knowledge to sustainable solutions is developed.

By adding Intervention Competence to university programmes, students are encouraged to engage with each other and their teachers to propose realistic and sustainable solutions to sustainability challenges. They use their diversity as a resource, a process that may be enhanced by virtual mobility arrangements between several universities.

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Introduction

Sustainable development as a process of social learning and action

The United Nations Decade of Education for Sustainable Development (UNDESD, 2005-2014) is drawing to a close as this chapter is being written. It is pertinent to ask the questions: 'What is its legacy? What should we continue to promote in future years?'

This chapter explores a particular aspect of the legacy which we consider to be of fundamental importance: a conceptual shift from the idea of sustainable development as a scientifically definable and agreed end point for society once all the relevant facts are known, to a process of social learning and action. The word 'process' in the formulation signals the idea of continual adjustment and occasionally major shifts in practice, while 'social learning' embodies the bringing together of different perspectives in dialogue and debate to create new knowledge that informs and makes possible human interventions for sustainability. The phrase 'social learning and action', which Kolb (Kolb, 1984) summarises as 'experiential learning', conveys the idea of a cyclical relationship between the two, which is generally known as the action-learning cycle (ibid.). Action-learning in turn can be viewed as the mechanism for the aforementioned process of sustainable development. However, as Jarvis (2012) demonstrated, not every experience functions as a driving force that generates high quality learning, since often the potential for learning is overlooked or avoidance of learning opportunities appear, for example in the case of low levels of self-efficacy of the participants involved (Bandura, 1997).

Fundamental philosophical principles behind this shift in how we understand sustainable development include:

- Constructivist views of knowledge and scientific uncertainty. More recently, how to work with scientific uncertainty in complex societal challenges has become the subject of what is termed 'post-normal science' (Funtowicz and Ravetz, 1993);
- Climate change as a prime example of this way of knowledge construction. Arguably all scientific knowledge obtained outside of strictly controlled laboratory conditions is less precise, and subject to modelling where the modeller's assumptions inevitably introduce incomplete, subjective dimensions and uncertainties;
- Difference as a primary source for constructing new knowledge, which draws on post-modernist notions of the validity of different perspectives, which is acknowledged in emerging theories on knowledge productivity and co-creation (see, for example, Chan and Dixon, 2012; Voorberg, Bekker and Tummers, 2013);
- The fundamental human ability to reflect and engage with others to generate new knowledge, what Habermas (Habermas, 1990, 2011) calls 'communicative action' and which is echoed in leading adult learning theories, such as the concept of reflective practitioner that was proposed by Schön (1987).

This conceptual shift has added a dynamic element to the classic, and still most cited, definition of sustainable development, that of the 1987 World Commission for Environment and Development chaired by the then Norwegian Prime Minister, Gro Harlem Brundtland:

> '... development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland,1987).

As with the Brundtland definition, however, the UNDESD-inspired change towards 'sustainable-development-as-learning-process' is abstract and requires grounding in social reality

where difference also reflects relations of power and inequality, and different perspectives do not in practice have equal validity. These power relations are further reflected in human engagement with the result that emerging new knowledge reflects the interests of the most powerful (Foucault, 1980; Haraway, 1988, 1989). Moreover, engagement is more a process of contestation than reasoned dialogue and debate (Hulme, 2009).

The outline of this chapter is as follows: in section 2 we introduce the concept of Lived Experience as a powerful way of crystallising and taking further the shift in thinking about Sustainable Development as outlined above. In section 3 we focus on the explanatory capacity of Lived Experience and its actual implementation in a European e-learning Master's programme on Climate Change. In section 4 we advocate a competence-based approach to education for sustainable development as such an approach is especially useful for integration of different knowledge domains and skills. In section 5 we focus specifically on Intervention Competence in relation to Sustainable Development given that the process of intervention in this domain is a major challenge when faced by multiple perspectives that derive from both science and lived experiences. We end in section 6 with some conclusions, which include our advocacy of Lived Experience and Intervention Competence in open access e-curricula, and suggestions for future research.

Sustainable Development and the concept of Lived Experience

The above ideas have led to the introduction of a people-centred concept, the 'Lived Experience of Climate Change' (Abbott and Wilson, 2012; Wilson et al., 2011), which was exemplified in an e-learning Master's programme by a diverse group of researchers in a European Union Erasmus project (LECH-e, 2009-2012; see website mentioned in Wilson, 2011). Lived Experience is knowledge gained by people over time through engagement with each other and learning from actions. It is thus an evolving knowledge, and hence a process, but it is also influenced by more enduring factors such as social class, gender, ethnicity and local cultural values. The concept takes on board the overlapping notions of social, experiential and situated learning, and action-learning cycles, while also recognising the social conditions of knowledge production and engagement (Johnson and Wilson, 2009, p. 128). It is a powerful concept because it focuses on people, and as such (Abbott and Wilson, 2013):

- Can be related to how people interpret differently the same global, societal challenge, such as climate change. It explains the variety of simultaneous, co-existing and often contradictory perspectives on this and other challenges;
- Recognises the social conditions of human actions as well as those of knowledge production;
- Reclaims everyday experiential knowledge as an important factor in interpretation of global challenges. In other words, science is not the only truth that informs global challenges such as climate change;
- Potentially overcomes the science-citizen dichotomy, because scientists are also human beings with lived experiences that filter their scientific findings into knowledge and actions;
- Leads to new ways of examining public engagement with science and the use of knowledge in political policy making. These new ways take us beyond a knowledge-deficit model (*'If only the public were communicated the scientific facts, they would recognise the importance of climate change'*), to one of engagement between different forms of knowledge to create new knowledge.

Within sustainable development, climate change is recognised as one of the most challenging and defining issues for our future. Equally, therefore, our concept of the Lived Experience of climate change may be extended and used in relation to the broader topic of sustainable development.

The Erasmus project concerned itself with introducing and examining the concept as complementary to traditional scientific (physical and social) ways of approaching education in sustainable development. It involved a truly interdisciplinary team of natural and social scientists, and engineers. The project also made a preliminary attempt to introduce and operationalise through its virtual mobility platform the competences that are needed to work with real-life, transboundary challenges of climate change policy (Chapter 2 in this volume) and intervention strategies. These challenges are associated with knowledge boundaries within and between the physical and social sciences, and how they are interpreted through lived experiences.

A diversity of perspectives, strengthened by e-learning

To the extent that it develops the idea of social learning and action, the concept of Lived Experience acknowledges the UNDESD. This is not a one-way process, however and in order to close the loop we have to ask a further question, which is: 'What does Lived Experience mean for education for sustainable development?'

We identify three dimensions:

a) Lived Experience is important for education for sustainable development because it has explanatory power. As stated above, the concept of Lived Experience, both explains the presence and validity of many competing perspectives at the same time;
b) Accepting the explanatory power of Lived Experience is to accept the validity of multiple perspectives on sustainable development. This then raises the further challenge of how to work *with* such diversity rather than *against* it. Our starting point here is the constructivist approach to knowledge where diversity is fundamental. We construct new knowledge through engagement with our differences – both big and small – not through being the same;
c) E-learning has a vital role to play in both using Lived Experience as an explanatory feature of education for sustainable development, and for developing transboundary and intervention competences. This is because of the potential of e-learning to provide quality education en masse and across geographical boundaries, where the sheer numbers and expanse across our earth ensure a rich diversity of perspectives. In this endeavour, students are at least as much creators of new knowledge out of their diversity as are the teachers. Thus, not only do the following sections focus on Intervention Competence, they do so in the context of e-learning.

The explanatory power of Lived Experience in education for sustainable development

It is not surprising that many students are to some extent bewildered when embarking on a course related to sustainable development. The learning and teaching in this field is perceived by them as complex and contradictory, and it leaves them with uncertainties with respect to

their professional practice. The results of a world survey among many (more than 1000) students from several countries worldwide indicate that students desire a better coverage of climate change education in their university programmes (Leal Filho, 2010; tables 5 and 7, p. 12 and p. 16).

One reason for such bewilderment is that their courses are often partial, focusing on one or a few aspects. Although there is a broad consensus on the fact that acquiring some basic knowledge of meteorological, geo-physical, geo-chemical aspects is necessary, it is now broadly agreed that this is in itself insufficient in an educational programme on human-induced climate change. The climate change issue has a complexity that requires additional knowledge and skills besides the natural sciences.

Consensus has grown that climate change education, just as education for sustainable development, should include the following aspects in its programme (UNESCO, 2004, 2010):

- raising awareness of the different levels of, and perspectives on, human-induced environmental problems and challenges (different temporal and spatial scales; economic, political, societal and cultural diversity);
- taking an interdisciplinary approach.

Moreover, and a second reason for potential bewilderment is that even within each aspect there are no definitive conclusions. Thus the physical science is uncertain and contested, while the economic and social implications discussed by social science approaches are even more so. Management and intervention, moreover, always appear difficult and 'political', where searching for prescriptions is futile. In short, science, social science and management education does not and cannot provide definitive answers to the questions of sustainable development and to expect them to do so is a recipe for disappointment. Nowhere is this better exemplified than in the many, competing perspectives on climate change. This is not simply a debate between those who see overwhelming evidence for human-induced global warming and those who deny such evidence. Even among those who are not deniers of global warming, there is much dispute over the degree and rate of temperature rise, and its effect on climate and subsequent impact on life.

With the concept of the Lived Experience (of Climate Change or any other subject related to sustainable development), however, one can teach students the existence of several perspectives at the same time. More importantly perhaps, one can use the concept to *explain why* these multiple perspectives exist, not only among the academic disciplines, but within them, and also why the general public is a key actor. In short it provides an organising idea for coherence of what is often seemingly incoherent. This needs, however, a rethinking of the pedagogy: what is an appropriate way to teach this?

Competence-based education in an e-learning context

Unleashing the power of e-learning demands a specific pedagogy, because without a well-thought pedagogy e-learning usually does not result into effective or efficient education.

The concept of 'competence' is increasingly being adopted in higher education and life-long-learning, especially in fields where an integration of different knowledge domains and skills is desirable, such as sustainable development and climate change. Competences and a competence-based curriculum are therefore at the heart of the curriculum development. A crucial question follows: how many competences are needed, are there key competences and how can tasks be designed in a both meaningful but also 'reliable' way?

It is important to be explicit about which definition one uses, since different cultural foci and learning theories lead to (implicit) different definitions (Boon and Van der Klink, 2003; Pérez Salgado, De Kraker, Boon and Van der Klink, 2012) and contribute to misunderstandings.

In the e-learning 'Lived Experience of Climate Change'-programme competence is defined as a 'cluster of skills and knowledge which can be learned through tasks performed in the workplace or through high-fidelity simulations of authentic work environments. By choosing this approach one is able to make a relatively complete description of a competence. Both for the communication to students and for a reliable assessment, a comprehensive and thorough definition is crucial and highly desirable.

Within competence-based curricula Van der Klink, Schlusmans and Boon (2007) pictures two types which will be outlined hereafter and are compared in table 1. The first curriculum is defined as mainstream competence-based curriculum (MCC) and this came into existence as a reaction to traditional curricula that were mainly knowledge-oriented and were insufficiently focused on the labour market needs. The main purpose of the MCC is to improve the match between curriculum and labour market demands by offering a curriculum that is mainly multi-disciplinary, learner-centred and based upon authentic situations. The locus of control is still the educational provider, i.e. the university.

One of the pitfalls of a MCC is that the present needs of employers are perhaps too dominantly incorporated in the curriculum, which is especially problematic in domains in which innovation and change are the constant factors combined with ambiguity regarding the future developments of a vocation or profession. For that reason Van der Klink et al. (2007) propose an alternative view on competence-based education which allows students themselves to steer much more the content of their learning: the self-directed competence-based curriculum (SDCC).

Table 1: Key features of mainstream competence-based and self-directed competence-based curricula

	Mainstream competence-based curricula	**Self-directed competence-based curricula**
Main purposes	– to achieve a better match between curricula and labour market demands – to give out degrees and certificates	– knowledge co-production and empowerment of the individual learner – to give out degrees and certificates
Content of the curriculum	Fixed curriculum based on authentic situations, cases in which students have to demonstrate broad competences, mainly multi-disciplinary	No central curriculum but a personal learning plan in which the student decides which learning situations he or she will use to acquire competences
Student activity	Carrying out tasks, solving problems in kinds of project-based learning activities	Students themselves decide which activities they undertake to acquire the competences
Teaching style	Combination of teacher- and student-centred learning. Activities to be decided mainly by the student	Combination of teacher- and student-centred learning. Activities and learning goals to be decided mainly by the student
Flexibility within the curriculum	The curriculum is adapted to the entry-level and personal needs of the student within the framework decided upon by the university	The student's personal preferences and needs are central.
Assessment	Demonstrating competences Summative and formative assessments. Emphasis on types of performance assessments, also in authentic situations (e.g. workplace)	Demonstrating competences in a way that is decided by the student. This applies to summative and formative assessments as well. Different types of assessment, including portfolio assessment

based on Van der Klink et al., 2007

Table 1 compares both types of competence-based educational curricula. It goes without saying that the SDCC appears to be slightly provocative and perhaps its full implementation is a harsh endeavor within the university context. However, education for sustainable development leads to either MCC or SDCC, but increasingly SDCC seems a better alternative for the challenges posed. In a SDCC-curriculum the concept of Lived Experience can be fully embraced, since its societal context is much broader and diverse than only the labour market.

Intervention Competence for Sustainable Development

As explained in the previous section, the use of competences in education for sustainable development can be appropriate, as long as one uses clear definitions. However, which are the key competences, and how many should be learned by students?

Here, we identify two key competences: transboundary and intervention competence. Since the e-learning programme is on Climate Change, we mention that as the field of application here. However, the competences can be easily broadened and used in other fields of sustainable development.

A key competence is to learn to think, collaborate, and communicate across the boundaries of the different perspectives. This ability for communicative engagement across boundaries is referred to as Transboundary Competence (de Kraker, Lansu, & van Dam-Mieras, 2007; also Chapter 2 of this volume). Another key competence is to be able to critically discuss how relevant scientific and experiential knowledge can inform solution(s) to the societal problems to which climate change exacerbates (or at least contributes) and, as a following step, to be able to reach decisions concerning intervention strategies. This ability is called Intervention Competence (Pérez Salgado et al., 2012) and is the focus for the remainder of this chapter.

With this competence students learn to make the step from studying a problem to formulating ways and options to reaching decisions or to interventions. A more formal definition of the Intervention Competence for Climate Change education would be:

> *'the ability to devise or propose, independently and after consultation with relevan actors, one or several sustainable solution(s) or to reach decisions for a climate change problem and indicate its consequences for the biophysical and socio- cultural environment.'*

Intervention Competence combines the scientific domains and skills, and experiential knowledge, to create an 'integrated' assessment, from which decisions can be reached and interventions designed. Firstly, it requires insight into the natural scientific (geo-bio-chemical) knowledge. Secondly, it requires social scientific knowledge of the social, economic, political, gender and cultural dimensions of climate change. Thirdly, it requires direct engagement with actual lived experiences which represent how people think and feel about a phenomenon, and hence are complementary to natural and social scientific knowledge. Thus, Intervention Competence focuses on the 'problem-solving' or 'decision-making' aspect. It leads to knowledge that is co-produced with a range of societal actors and uses this knowledge for reaching widely acceptable decisions concerning appropriate interventions and their design. Thus it can serve social and societal change.

Whereas Transboundary Competence concerns the ability to engage productively using different perspectives on sustainable development and communicating productively with different groups (cultural, gender, class, racial), with Intervention Competence we take this as the starting point for further development.

This competence development involves:

- appreciating the importance of (trying to) reach to decisions or interventions;
- being aware of a *multitude of solutions*, related to different perspectives and to different groups of actors;
- being able to translate this diversity into propositions and decisions for interventions (actions);
- being able to engage in political-strategic thinking, combined with personal and individual goal-directedness (strategic decision making);
- *being able to steer towards collectively produced proposals and decisions*, articulating policies and/or proposing initiatives which challenge the existing non-sustainable practices, and are change-effective.

It goes without saying that traditional straight-forward intervention strategies are not included in the notion of the Intervention Competence as described here. It has no relation to Roger's well-known innovation model (Roger, 1995), since this prescribes a top-down change approach in innovation processes. Emerging approaches in the area of knowledge production (Stam, 2007), innovation and social capital (Nahapiet and Goshal, 1998) appear to be more in correspondence with the views on the Intervention Competence that are expressed in this chapter. However, emerging approaches are still in their infancy and usually lack a proposal for an elaborated strategy that outlines the different steps and activities to be taken in the process of intervening (Van der Klink, 2012).

Exploring sophisticated approaches in other professional domains might be supportive in further rethinking the content of Intervention Competence. Here we would like to point at Intervention Mapping as a promising approach that is often applied in different healthcare contexts to tackle complex health issues in an evidence-based manner and focuses on the change of behaviour of the targeted users of the intervention (see for examples Michie et al., 2008; Wolfers et al., 2007).

In the e-learning programme LECH-e the Intervention Competence has been introduced (Pérez Salgado et al., 2012), but the focus was mainly on the development of Transboundary Competence. Intervention Competence needs to be further developed both conceptually and didactically; evaluations are needed as well. Through designing competence-tasks for students in the e-learning environment in such a way that they can practise intervention competence at each level, students can gain insight and command step-by-step.

When students master Intervention Competence they are prepared for their future roles as professionals in the field and as active citizens. In fact, Intervention Competence can be seen as the lynchpin between science and scientific knowledge at a university on the one hand and change processes in society and personal action(s) on the other. In addition, the combination of Lived Experience and Intervention Competence allows students, professionals and citizens to link their own experience to science and to (often) remote government policies. As such, they learn how to appreciate the diversity of different Lived Experiences, and accept and work on a multitude of different 'best solutions'.

Conclusions

E-learning harbours innovative examples in the field of education for sustainable development. In this chapter, we have explained and explored further two powerful concepts: Lived Experience and Intervention Competence. Both were introduced and developed by a group of

European researchers in an open access Masters Track 'The Lived Experience of Climate Change'.

Traditional e-learning programmes focus mainly on disciplinary knowledge reproduction, whereas education for sustainable development requires an integration of academic fields and an appreciation of societal aspects.

The people-centred concept of Lived Experience is integrative, pluralistic and holistic, and is self-explanatory with respect to a diversity of perspectives on sustainable development, since lived experience will by its nature vary. The starting point is a constructivist approach to knowledge where diversity is fundamental. New knowledge is constructed through engagement with our differences – both big and small – not through being the same. In addition to individual variability, the concept embodies more enduring societal perspectives (race, class, gender, culture). It connects abstract scientific knowledge to local, personal and cultural diversity, and thus explains a diversity of perspectives, and in addition, allows for a diversity of interventions. In this respect, it is an example of social learning and gears towards an action competence-based learning process. In this process, new knowledge is constructed.

We introduce a (partly) self-directed competence-based curriculum, in which the concept of Lived Experience is developed using two competences, which we consider to be crucial for Sustainable Development. Both focus on understanding, managing and working with diversity: Transboundary and Intervention Competence. Transboundary Competence concerns transcending the knowledge boundaries associated with multiple perspectives to arrive at new knowledge (see chapter 3). Intervention Competence concerns arriving at decisions and designing appropriate interventions for sustainable development from the new knowledge so derived. In this chapter we develop this competence further pedagogically.

By learning and training both Lived Experience and Intervention Competence in open access e-curricula, students and citizens all over the world can overcome their bewilderment with respect to sustainable development, better grasp its complexity, and envisage and work on effective solutions.

We stress, however, that this is work in progress and we are still near the start of a long journey. Our argument above sparks two immediate questions for future research around education for sustainable development:

1. How can the explanatory power of Lived Experience be operationalised as a normative concept that students (and professionals) can then carry forward to their future professional lives, and as citizens?
2. Moving beyond the general, what are the specific dynamics of Intervention Competences that enable them to facilitate effectively what they are supposed to facilitate, namely intervention in multi-actor settings?

These questions are currently the basis of further research, in which students, professionals and citizens are being involved.

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